What happened to Millers Bay?

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Teaching content area(s): Life Science

School: Hartley-Melvin-Sanborn HS

Extern host site: State Hygienic Lab- Lakeside

Part I: Overview of Business

The State Hygienic Laboratory was started in 1904; it plays a vital role of public health in Iowa. It is the state's public health and environmental laboratory and serves all 99 counties. The State Hygienic Lab does disease detection, environmental monitoring, and newborn and maternal screening. There are three locations throughout Iowa. A collaborative agreement between Lakeside Laboratory and the State Hygienic Lab starting in 2008; a water quality monitoring and testing lab is housed on campus. Iowa Lakeside Lab was started in 1909 as a field station. It is owned the state of Iowa and operated by the Board of Regents. It is a 147-acre campus on West Lake Okoboji on Little Miller's Bay. In the 1930s the CCC build 5 stone laboratories, 4 student cabins, a bathhouse, and other amenities. More buildings were built in the 1960s and 1970s. The Waitt Building was constructed in 1998 and houses the water quality lab.

Part II: Job Specifics

The State Hygienic Lab at Lakeside is a water quality lab. The staff analyzes water from water treatments facilities, wastewater treatments facilities, lakes, rivers, and watersheds. The water can be tested for temperature, pH, total phosphorus, ortho-phosphate, nitrates, turbidity, dissolved oxygen, and a variety of other items.

Part III: Introduce the Problem

Millers Bay is a hotspot for swimming and recreation. People have been noticing that Little Millers Bay and Millers Bay are looking different than normal. A usually clear bay with little algae doesn't appear the same. Many bay goes say, "I can't see very far into the water anymore." "There seems to be a lot of 'stuff; in the water"

These statements have to led staff on Lakeside's campus and concerning citizens to start some testing. Here is what they have found so far: a decrease in water quality as found with a Secchi disc and fluctuating dissolved oxygen levels.

The State Hygienic Lab staff tested that water and found increased amount of total phosphorus (as compared to previous years), increased amount of ortho-phosphate , and increase in nitrate levels.

Part IV: Background

Understand a watershed and how pollutants and humans can impact aquatic ecosystems.

-Students needs to become familiar with the Lakeside campus and the other surrounding lakeshore. This can be accomplished through a hike of the property of lakeside and virtual Google Earth maps viewing of the bay.

-Watershed understanding needs to occur to understand how water flows into the bay.

-Point and non-point source pollution comprehension needs to occur.

-An understanding of human impact on ecosystems, including aquatic ecosystems must be taught.

-Students could sample the watersheds to see where the problem could be originating from.

Part V: Business Solution

The staff would collect samples from the different watersheds on the campus. They would complete in the field tests for some initial results. Samples would be collected. The sample would than be tested at the water quality lab to to determine what if any of the watersheds are contributing to the changes in the bay.

After determining the 'problem' watershed, the staff would work with the adjourning landowner to fix the problem. If that cannot be accomplished, the staff would try to figure out a way to help clean the water before it enters the bay.

Part VI: Student Solutions

Students could develop materials to educate the adjourning land owners about how their property drains to the lake. Students could help figure out solutions to help filter the water before it enters the lake by changing the landscape and/or vegetation.

Students will create materials to discuss the importance of keeping the lake clean and healthy, including ecological and economic benefits.